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December 8, 2005

Commissioner for Patents
ATTN: Certificate of Correction Branch
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Re: Request for Reprint of Patent (37 C.F.R. § 1.322 and 1.323)
U.S. Patent No. 6,953,534, Issued: October 11, 2005
Inventor(s): R. Douglas Hudgens
Application Serial No. 09/611,413
Filed: July 6, 2000
TITLE: ENGINE ANTIFREEZE COMPOSITION
Attorney Docket: 8017-244

Certificate
DEC 15 2005
of Correction

Dear Commissioner:

Pursuant to a conversation with the Certificate of Corrections Branch, we respectfully request that the above-identified patent be reprinted in total due to the significant nature and number of errors in the present issued patent, which were made solely on the part of the Patent Office. Only in the alternative, if it is not possible to reprint the patent in its entirety, does the patent owner then request that a Certificate of Correction be issued to address the same. For the Office's benefit, the exact location where the errors occur and the necessary corrections are indicated on the attached form, and a brief explanation follows.

In particular, numerous claim amendments which were included in an Amendment filed with the Office dated January 3, 2003 but not made in the claims issued in the patent. This is the case even though newly added claims in that same Amendment do appear in the patent as issued. In addition, the informal drawings were printed with the patent instead of the more formal drawings which the Applicant had filed with the Office dated October 14, 2004.

In view of the fact that these errors were made by the Office, it is not believed that any fee should be required at this time. Nevertheless, if it is determined that any fee is required, please charge such fee to Deposit Account No. 23-3030 as needed. Please also send the reprinted patent or Certificate of Correction to Charles R. Reeves at Woodard, Emhardt, Moriarty, McNett & Henry LLP, 111 Monument Circle, Suite 3700, Indianapolis, Indiana 46204-5137. A duplicate of PTO SB/44 is enclosed.

Respectfully submitted,

Charles R. Reeves

Enclosures
8017-244.CRR.gp.372343

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO. : 6,953,534 *B1*

Page 1 of 1

APPLICATION NO. : 09/611/413

ISSUE DATE : October 11, 2005

INVENTOR(S) : Hudgens

It is certified that error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Substitute the attached formal drawings.

Col. 6, line 13, please add a period after the word --water.--

Col. 8, line 62, please delete the extra space between --T he--

Col. 8, line 64, please delete the --t-- after the word --The--

Col. 8, line 64, please delete the extra space between --we re--

Claim 1, col. 9, line 65, please delete the words --and at least one of benzoic acid,-- and insert in lieu thereof --an aromatic carboxylic acid,--

Claim 1, col. 9, line 66, please add the word --optionally-- prior to --a C₉-C₁₂--

Claim 4, col. 10, line 16, please delete the words --benzoic acid-- and insert in lieu thereof --an aromatic carboxylic acid,--

Claim 4, col. 10, line 17, please add the word --the-- after the word --or--

Claim 12, col. 11, line 16, please delete --pr-- after the word acid and insert in lieu thereof --or--

Claim 13, col. 11, line 33, please delete the words --benzoic acid-- and insert in lieu thereof --an aromatic carboxylic acid--

Claim 17, col 12, line 6, please insert the number --5-- in-between --about-- and --wt--

Claim 19, col 12, line 16, please delete the words --benzoic acid-- and insert in lieu thereof --an aromatic carboxylic acid--

MAILING ADDRESS OF SENDER (Please do not use customer number below):

Woodard, Emhardt, Moriarty, McNett & Henry LLP
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UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO. : 6,953,534 *31*

Page 1 of 1

APPLICATION NO. : 09/611/413

ISSUE DATE : October 11, 2005

INVENTOR(S) : Hudgens

It is certified that error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Substitute the attached formal drawings.

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Col. 8, line 64, please delete the --t-- after the word --The--

Col. 8, line 64, please delete the extra space between --we re--

Claim 1, col. 9, line 65, please delete the words --and at least one of benzoic acid,-- and insert in lieu thereof --an aromatic carboxylic acid,--

Claim 1, col. 9, line 66, please add the word --optionally-- prior to --a C₉-C₁₂--

Claim 4, col. 10, line 16, please delete the words --benzoic acid-- and insert in lieu thereof --an aromatic carboxylic acid,--

Claim 4, col. 10, line 17, please add the word --the-- after the word --or--

Claim 12, col. 11, line 16, please delete --pr-- after the word acid and insert in lieu thereof --or--

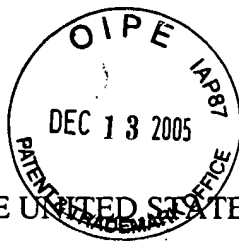
Claim 13, col. 11, line 33, please delete the words --benzoic acid-- and insert in lieu thereof --an aromatic carboxylic acid--

Claim 17, col 12, line 6, please insert the number --5-- in-between --about-- and --wt--

Claim 19, col 12, line 16, please delete the words --benzoic acid-- and insert in lieu thereof --an aromatic carboxylic acid--

MAILING ADDRESS OF SENDER (Please do not use customer number below):

Woodard, Emhardt, Moriarty, McNett & Henry LLP
Charles R. Reeves, Reg. No. 28,750
Chase Center/Tower
111 Monument Circle, Suite 3700
Indianapolis, IN 46204-5137
Patent No. 6,953,534



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:)
)
 R. Douglas Hudgens) Before Examiner
) Hamlin
)
 Serial No. 09/611,413) Group Art Unit
) 1751
)
 Filed July 6, 2000)
)
 ENGINE ANTIFREEZE COMPOSITIONS)

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to the Commissioner for Patents, Washington, D.C. 20231 on

January 3, 2003
 Date of Deposit

James B. Myers, Jr.

Name of Registered Representative

James B. Myers, Jr.
 Signature

RESPONSE TO FIRST OFFICE ACTION

Commissioner for Patents
 Washington, DC 20231

Sir:

In response to the Office Action dated July 5, 2002, Applicant respectfully requests entry of the following amendments and consideration of the accompanying remarks.

Applicant files concurrent with this response a Request for Extension of Time for responding to this Office Action. Additionally, please provide any further extensions of time that may be necessary and charge any additional fees that may be due to Deposit Account 23-3030, but do not include any payment of issue fees that are or may become due.

AMENDMENTS

Please amend the following claims:

1. (Amended) An engine coolant composition comprising:
 an organic acid component or salt thereof, said organic acid component comprising adipic acid, an aromatic carboxylic acid, and optionally a C₉-C₁₂ aliphatic dicarboxylic acid;

an anticorrosion additive including molybdate, and at least one of mercaptobenzothiazole, benzotriazole, tolyltriazole, nitrite, nitrate, and silicate;

a buffer component comprising a sodium salt of at least one of a borate salt or a phosphate salt, and,
a freezing point depressant.

4. (Amended) The coolant composition of claim 1 wherein the aromatic carboxylic acid or the C₉-C₁₂ aliphatic dicarboxylic acid is included in an amount between about 0.5 wt % and about 5 wt %, measured as the free acid and based on the total weight of the coolant composition.

12. (Amended) The composition of claim 11 consisting essentially of, in weight percent:
between about 0.1 wt % and about 0.5 wt % adipic acid,
between about 2.0 wt % and about 3.0 wt % of an aliphatic dicarboxylic acid or a salt thereof, said dicarboxylic acid selected from the group consisting of: sebacic acid dodecanedioic acid, and a mixture thereof,
between about 0.5 wt % and about 2.5 wt % benzoic acid,
between about 0.1 wt % and about 0.5 wt % nitrite salts,
between about 0.1 wt % and about 0.5 wt % nitrate salts,
between about 0.1 wt % and about 0.5 wt % molybdate salts,
between about 0.1 wt % and about 0.5 wt % of at least one of mercaptobenzothiazole, benzotriazole, or tolyltriazole, and
between about 80 wt % to about 99 wt % of at least one of ethylene glycol or propylene glycol.

13. (Amended) An engine coolant composition comprising:
an organic acid component, said organic acid component comprising adipic acid and at least one of an aromatic carboxylic acid, and a C₉-C₁₂ aliphatic dicarboxylic acid or salts of these acids;
an anticorrosion additive including molybdate, and at least one of mercaptobenzothiazole, benzotriazole, tolyltriazole, nitrite, nitrate, and silicate;

a buffer component comprising at least one of a borate salt or a phosphate salt;
and
hard water.

19. (Amended) A method of reducing the corrosion of metal surfaces in a cooling system having a recirculating liquid coolant comprising hard water, said method comprising:

adding to said liquid coolant, an additive comprising an organic acid component or salt thereof, said acid component comprising a mixture of a C₄-C₆ dicarboxylic acid and at least one of an aromatic carboxylic acid or a C₉-C₁₂ aliphatic dicarboxylic acid; and an anti-corrosion additive including molybdate, and at least compound selected from the group consisting of: mercaptobenzothiazole, benzotriazole, tolyltriazole, nitrite, nitrate, and silicate.

Please add the following new claims

23. (New) The coolant composition of claim 1 wherein the acid component, the anticorrosion component, and the buffer component are dissolved.

24. (New) The coolant composition of claim 1 comprising hard water.

25. (New) A coolant composition comprising, in weight percent:
between about 0.1 wt % and about 0.5 wt % adipic acid,
between about 1.0 wt % and about 2.0 wt % sebacic acid,
between about 0.1 wt % and about 0.5 wt % of at least one of
mercaptobenzothiazole, benzotriazole, or tolyltriazole,
between about 30 wt % to about 70 wt % of at least one of ethylene glycol or
propylene glycol, and
optionally between about 0.1 wt % and about 0.5 wt % molybdate salts.

REMARKS

Entry of the above amendments and consideration of the following remarks are respectfully requested. Upon entry of the above amendments, this Application will contain claims 1-25 pending and under consideration.

Claims 1-22 were provisionally rejected under the judicially created doctrine of double patenting over co-pending application USSN 09/611,332. Claims 1-22 were rejected under 35 USC §102(b) or in the alternative under 35 USC §103(a) over Little (US 5,071,580). For the reasons discussed more fully below, it is believed that the claimed invention is patentable over the cited art. Reconsideration of this application leading to timely allowance is requested.

Double Patenting Rejection

Claims 1-22 were provisionally rejected under the judicially created doctrine of double patenting rejections over the claims of co-pending application USSN 09/611,413. Applicant will submit an acceptable terminal disclaimer upon indication of allowable subject matter to overcome the double patenting rejection.

Rejections Under 35 USC §102 or In the Alternative Under §103

Claims 1-22 were rejected under 35 USC §102(b) or in the alternative under 103(a) over Little. Applicant has amended claim 1 to recite that the acid component in the engine coolant composition includes both an adipic acid an aromatic carboxylic acid. Support for the amendment can be found, *inter alia*, in the application on page 7, lines 15-18 and on page 8, lines 3-11. Claim 4 has been amended by replacing benzoic acid with aromatic carboxylic acid to correspond to claim 1. It is believed that this amendment is a broaden amendment.

Little does not disclose or make obvious the invention as presently claimed in claim 1 that includes both adipic acid and an aromatic acid. Little is completely silent as to the addition of an aromatic acid.

Furthermore, the references cited in the Office Action do not suggest a coolant composition that contains both adipic acid and an aromatic acid. In fact, Pabon et al.

teaches away from the claimed invention. (Pabon et al. was cited in the Office Action on page 5 as pertinent to the disclosure.) Pabon et al. requires a mono carboxylic acid and specifically states that "using a dicarboxylic acid in place of the mono-carboxylic acid in formulations containing benzoic acid ... did not provide adequate protection against corrosion of metal surfaces." (Pabon et al., col. 4, lines 52-56.) Consequently, one skilled in the art after reviewing the references of record would not consider combining adipic acid (a dicarboxylic acid) and an aromatic acid in a coolant composition in combination with the anticorrosion inhibiting additive and the buffer as recited in claim 1.

Little either alone or in combination with the cited references does not disclose or make obvious the claimed invention that includes an aromatic carboxylic in conjunction with an aliphatic dicarboxylic acid such as adipic acid (or optionally a C₉-C₁₂ aliphatic dicarboxylic acid). Applicant respectfully requests that the rejections under §102 and §103 of claim 1 and claims 2-10, which depend from claim 1, be withdrawn.

Claim 12 has been amended to correct a minor typographical error on line 4 to replace "pr" with --or--

Claim 11 recites that the composition includes between 80 wt % and 99 wt % of at least one of ethylene glycol or propylene glycol. Little discloses a corrosion inhibitor that is only provided as either a slurry, a solid, a briquette, or a premix (Little, col. 3, lines 25-29, lines 40-47, and col. 6, lines 18-45.) At best the slurry contains only 5-20 percent of the vehicle (a glycol vehicle). (Id, col. 4, lines 49-53.) Consequently, it is believed that Little does not disclose or make obvious a coolant composition as presently claimed. Withdrawal of the rejections over claim 11 and claim 12, which depends from claim 11 is requested.

Claim 13 has been amended to similar to claim 1 to recite that the composition includes an aromatic carboxylic acid. Further claim 13 also recites that the composition includes hard water. Little does not disclose using water in the anti-freeze formulation. Little only discloses a glycol vehicle "as the only liquid component of the slurry". (Little, col. 4, lines 33-37.) Consequently one skilled in the art would not consider that Little discloses or suggests an antifreeze composition that addressing the problem of using "hard water" in a coolant system. The composition as recited in claim 13 has been

specifically formulation to provide beneficial effects to engines and coolant systems in the presence of hard water. (Application, page 6, line 22 - page 7, line 7.)

In light of the fact that Little does not disclose or suggest a coolant composition with "hard water," Applicant believes that claim 13 is patentable over this cited reference. Applicant requests that the rejections under 35 USC §102(b) or in the alternative under §103(a) of claim 13 and claims 14-18, which depend from claim 13 be withdrawn.

Claim 19 is directed to a method of reducing corrosion in a cooling system having recirculating liquid coolant comprising hard water. Claim 19 similar to claims 1 and 13 has been amended to include an aromatic carboxylic acid. As noted above, Little does not disclose or suggest either an additive formulation for use with hard water or a method of reducing corrosion in a system with hard water. Little's system contains essentially a glycol vehicle as the only solvent or coolant. None of the other cited references specifically address the problems associated with the use of hard water in a liquid coolant system. Consequently it is believed that the Little either alone or in combination with the cited references does not disclose or make obvious to one skilled in the art the inventions as recited in claim 19 including reducing corrosion in a system comprising hard water. Applicant respectfully requests that the rejections under 35 USC §102(b) (or §103) be withdrawn for claim 19 and for claims 20-22, which depend from claim 19.

New claims 23-25 have been added. Claim 23 recites that the components are completely dissolved. Support for claim 23 can be found in the application, *inter alia*, on page 11, lines 5-7. As noted above, Little discloses a corrosion inhibitor that is only provided as either a slurry, a solid, a briquette, or a premix (Little, col. 3, lines 25-29, lines 40-47, and col. 6, lines 18-45.) The components in Little's composition are not completely dissolved.

Claim 24 recites that the coolant composition includes hard water. Support for claim 24 is found in the application, *inter alia*, on page 7, lines 1-6, and in claims 13-22. Little does not disclose or suggest that his composition can be used with hard water.

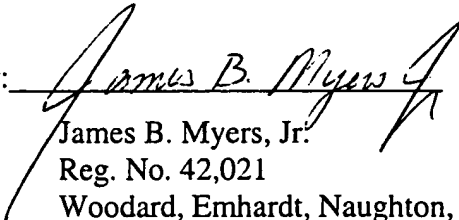
Claim 25 recites that the coolant composition contains "between about 30 wt % to about 70 wt % of at least one of ethylene glycol or propylene glycol." Support for this claim can be found in the application on page 11, lines 12-14. As noted above, Little's

composition contains at best only 5-20 percent of the vehicle (a glycol vehicle) (Little, col. 4, lines 49-53.)

Conclusion

In view of the foregoing remarks, it is respectfully suggested that the cited reference does not disclose or make obvious the claimed invention. Accordingly, reconsideration leading to withdrawal of all rejections under 35 USC §102(b) and §103(a) and passage of this application containing claims 1-25 are respectfully requested. Additionally, the Examiner is invited to telephone the undersigned attorney if there are any questions about this submission or other matters, which may be addressed in that fashion.

Respectfully submitted,

By: 
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Reg. No. 42,021
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VERSION WITH MARKING TO SHOW CHANGES

1. (Amended) An engine coolant composition comprising:
an organic acid component or salt thereof, said organic acid component comprising adipic acid ~~and at least one of benzoic acid~~ , an aromatic carboxylic acid, and optionally a C₉-C₁₂ aliphatic dicarboxylic acid;
an anticorrosion additive including molybdate, and at least one of mercaptobenzothiazole, benzotriazole, tolyltriazole, nitrite, nitrate, and silicate;
a buffer component comprising a sodium salt of at least one of a borate salt or a phosphate salt, and
a freezing point depressant.

4. (Amended) The coolant composition of claim 1 wherein the aromatic carboxylic acid ~~benzoic acid~~ or the C₉-C₁₂ aliphatic dicarboxylic acid is included in an amount between about 0.5 wt % and about 5 wt %, measured as the free acid and based on the total weight of the coolant composition.

12. (Amended) The composition of claim 11 consisting essentially of, in weight percent:
between about 0.1 wt % and about 0.5 wt % adipic acid,
between about 2.0 wt % and about 3.0 wt % of an aliphatic dicarboxylic acid ~~or~~ or a salt thereof, said dicarboxylic acid selected from the group consisting of: sebacic acid dodecanedioic acid, and a mixture thereof,
between about 0.5 wt % and about 2.5 wt % benzoic acid,
between about 0.1 wt % and about 0.5 wt % nitrite salts,
between about 0.1 wt % and about 0.5 wt % nitrate salts,
between about 0.1 wt % and about 0.5 wt % molybdate salts,
between about 0.1 wt % and about 0.5 wt % of at least one of mercaptobenzothiazole, benzotriazole, or tolyltriazole, and

between about 80 wt % to about 99 wt % of at least one of ethylene glycol or propylene glycol.

13. (Amended) An engine coolant composition comprising:

an organic acid component, said organic acid component comprising adipic acid and at least one of an aromatic carboxylic acid, ~~benzoic acid~~ and a C₉-C₁₂ aliphatic dicarboxylic acid or salts of these acids;

an anticorrosion additive including molybdate, and at least one of mercaptobenzothiazole, benzotriazole, tolyltriazole, nitrite, nitrate, and silicate;

a buffer component comprising at least one of a borate salt or a phosphate salt; and

hard water.

19. (Amended) A method of reducing the corrosion of metal surfaces in a cooling system having a recirculating liquid coolant comprising hard water, said method comprising:

adding to said liquid coolant, an additive comprising an organic acid component or salt thereof, said acid component comprising a mixture of a C₄-C₆ dicarboxylic acid and at least one of an aromatic carboxylic acid ~~benzoic acid~~ or a C₉-C₁₂ aliphatic dicarboxylic acid; and an anti-corrosion additive including molybdate, and at least compound selected from the group consisting of: mercaptobenzothiazole, benzotriazole, tolyltriazole, nitrite, nitrate, and silicate.

CLEAN VERSION OF THE ENTIRE SET OF PENDING CLAIMS

1. (Amended) An engine coolant composition comprising:
an organic acid component or salt thereof, said organic acid component comprising adipic acid, an aromatic carboxylic acid, and optionally a C₉-C₁₂ aliphatic dicarboxylic acid;
an anticorrosion additive including molybdate, and at least one of mercaptobenzothiazole, benzotriazole, tolyltriazole, nitrite, nitrate, and silicate;
a buffer component comprising a sodium salt of at least one of a borate salt or a phosphate salt, and
a freezing point depressant.
2. The coolant composition of claim 1 wherein the adipic acid or a salt thereof is included in an amount between about 0.1 wt % and about 5 wt %, measured as the free acid and based on the total weight of the coolant composition.
3. The coolant composition of claim 1 comprising between about 0.5 wt % and about 10 wt % of the organic acid component, measured as the free acid and based upon the total weight of the coolant composition.
4. (Amended) The coolant composition of claim 1 wherein the aromatic carboxylic acid or the C₉-C₁₂ aliphatic dicarboxylic acid is included in an amount between about 0.5 wt % and about 5 wt %, measured as the free acid and based on the total weight of the coolant composition.
5. The coolant composition of claim 1 provided to have a pH level between about 7.5 and about 11 pH units.
6. The coolant composition of claim 1 provided as a liquid concentrate.

7. The coolant composition of claim 1 provided as a ready-to-use-formulation for a internal combustion engine cooling system.

8. The composition of claim 1 comprising:
an organic acid component or salt thereof including adipic acid, benzoic acid and at least one C₉-C₁₂ aliphatic dicarboxylic acid;
an anticorrosion additive including molybdate, nitrite, nitrate, silicate and at least one of mercaptobenzothiazole, benzotriazole, or tolyltriazole;
a borate salt; and
a freezing point depressant.

9. The composition of claim 1 comprising:
an organic acid component or salt thereof, said organic acid component consisting of adipic acid, benzoic acid and at least one C₉-C₁₂ aliphatic dicarboxylic acid;
an anticorrosion additive including molybdate, nitrite, nitrate, and at least one of mercaptobenzothiazole, benzotriazole, or tolyltriazole;
a phosphate salt; and
a freezing point depressant.

10. The composition of claim 1 comprising:
between about 0.1 wt % and about 0.5 wt % adipic acid,
between about 1.0 wt % and about 2.0 wt % of an aliphatic dicarboxylic acid or a salt thereof, said dicarboxylic acid selected from the group consisting of: sebacic acid, dodecanedioic acid and mixtures thereof,
between about 0 wt % and about 0.5 wt % nitrite salts,
between about 0 wt % and about 0.5 wt % nitrate salts,
between about 0 wt % and about 0.5 wt % molybdate salts,
between about 0 wt % and about 0.5 wt % silicate salts,
between about 0.1 wt % and about 0.5 wt % of at least one of mercaptobenzothiazole, benzotriazole, or tolyltriazole, and
between 0.1 wt % and about 0.5 wt % of at least one of borate salts and phosphate salts; and
between about 80 wt % to about 99 wt % of at least one of ethylene glycol or propylene glycol.

11. A coolant composition comprising, in weight percent:
between about 0.1 wt % and about 0.5 wt % adipic acid,
between about 1.0 wt % and about 2.0 wt % sebacic acid,
between about 0.1 wt % and about 0.5 wt % of at least one of mercaptobenzothiazole, benzotriazole, or tolyltriazole,
between about 80 wt % to about 99 wt % of at least one of ethylene glycol or propylene glycol, and
optionally between about 0.1 wt % and about 0.5 wt % molybdate salts.

12. (Amended) The composition of claim 11 consisting essentially of, in weight percent:

- between about 0.1 wt % and about 0.5 wt % adipic acid,
- between about 2.0 wt % and about 3.0 wt % of an aliphatic dicarboxylic acid or a salt thereof, said dicarboxylic acid selected from the group consisting of: sebacic acid dodecanedioic acid, and a mixture thereof,
- between about 0.5 wt % and about 2.5 wt % benzoic acid,
- between about 0.1 wt % and about 0.5 wt % nitrite salts,
- between about 0.1 wt % and about 0.5 wt % nitrate salts,
- between about 0.1 wt % and about 0.5 wt % molybdate salts,
- between about 0.1 wt % and about 0.5 wt % of at least one of mercaptobenzothiazole, benzotriazole, or tolyltriazole, and
- between about 80 wt % to about 99 wt % of at least one of ethylene glycol or propylene glycol.

13. (Amended) An engine coolant composition comprising:

- an organic acid component, said organic acid component comprising adipic acid and at least one of an aromatic carboxylic acid, and a C₉-C₁₂ aliphatic dicarboxylic acid or salts of these acids;
- an anticorrosion additive including molybdate, and at least one of mercaptobenzothiazole, benzotriazole, tolyltriazole, nitrite, nitrate, and silicate;
- a buffer component comprising at least one of a borate salt or a phosphate salt;

and

hard water.

14. The coolant composition of claim 13 comprising a freezing point depressant.

15. The coolant composition of claim 13 wherein the adipic acid or a salt thereof is included in an amount between about 0.1 wt % and about 5 wt %, measured as the free acid and based on the total weight of the coolant composition.

16. The coolant composition of claim 13 comprising between about 0.5 wt % and about 10 wt % of the organic acid component, measured as the free acid and based upon the total weight of the coolant composition.

17. The coolant composition of claim 13 wherein the benzoic acid or C₉-C₁₂ aliphatic dicarboxylic acid or a salt thereof is included in an amount between about 0.5 wt % and about 5 wt %, measured as the free acid and based on the total weight of the coolant composition.

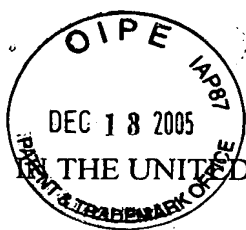
18. The coolant composition of claim 13 provided to have a pH level between about 7.5 and about 11 pH units.

19. (Amended) A method of reducing the corrosion of metal surfaces in a cooling system having a recirculating liquid coolant comprising hard water, said method comprising:

adding to said liquid coolant, an additive comprising an organic acid component or salt thereof, said acid component comprising a mixture of a C₄-C₆ dicarboxylic acid and at least one of an aromatic carboxylic acid or a C₉-C₁₂ aliphatic dicarboxylic acid; and an anti-corrosion additive including molybdate, and at least compound selected from the group consisting of: mercaptobenzothiazole, benzotriazole, tolyltriazole, nitrite, nitrate, and silicate.

20. The method of claim 19 wherein the liquid coolant is maintained at a pH level between about 7.5 and about 11 pH units.

21. The method of claim 19 wherein the C₄-C₆ dicarboxylic acid or salt thereof is added in an amount sufficient to enhance the inhibition of corrosion of aluminum containing components relative to a liquid coolant without the C₄-C₆ dicarboxylic acid or salt thereof.
22. The method of claim 19 wherein the additive comprising a buffer agent selected from the group consisting of: borates, phosphates, benzoates and mixtures thereof.
23. (New) The coolant composition of claim 1 wherein the acid component, the anticorrosion component, and the buffer component are dissolved.
24. (New) The coolant composition of claim 1 comprising hard water.
25. (New) A coolant composition comprising, in weight percent:
between about 0.1 wt % and about 0.5 wt % adipic acid,
between about 1.0 wt % and about 2.0 wt % sebacic acid,
between about 0.1 wt % and about 0.5 wt % of at least one of
mercaptobenzothiazole, benzotriazole, or tolyltriazole,
between about 30 wt % to about 70 wt % of at least one of ethylene glycol or propylene glycol, and
optionally between about 0.1 wt % and about 0.5 wt % molybdate salts.



THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:)
Hudgens) Before the Examiner
Serial No. 09/611,413) Hamlin, Derrick G.
Filed July 6, 2000)
ENGINE ANTIFREEZE COMPOSITION) Group Art Unit
1751

SUBMISSION OF FORMAL DRAWINGS

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed herewith is one sheet of formal drawings covering Fig. 1 through Fig. 2. It is requested that these pages of formal drawings be substituted for the drawings originally filed in the above-identified application.

It is believed there are no fees due with this submission; however, the Patent & Trademark Office is hereby authorized to charge any fees that may be due to Deposit Account No. 23-3030.

Respectfully submitted,

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to the Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450.	
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<u>James B. Myers</u>	
Name of Registered Representative	
<u>James B. Myers</u>	
Signature	
<u>October 14 2004</u>	
Date of Signature	

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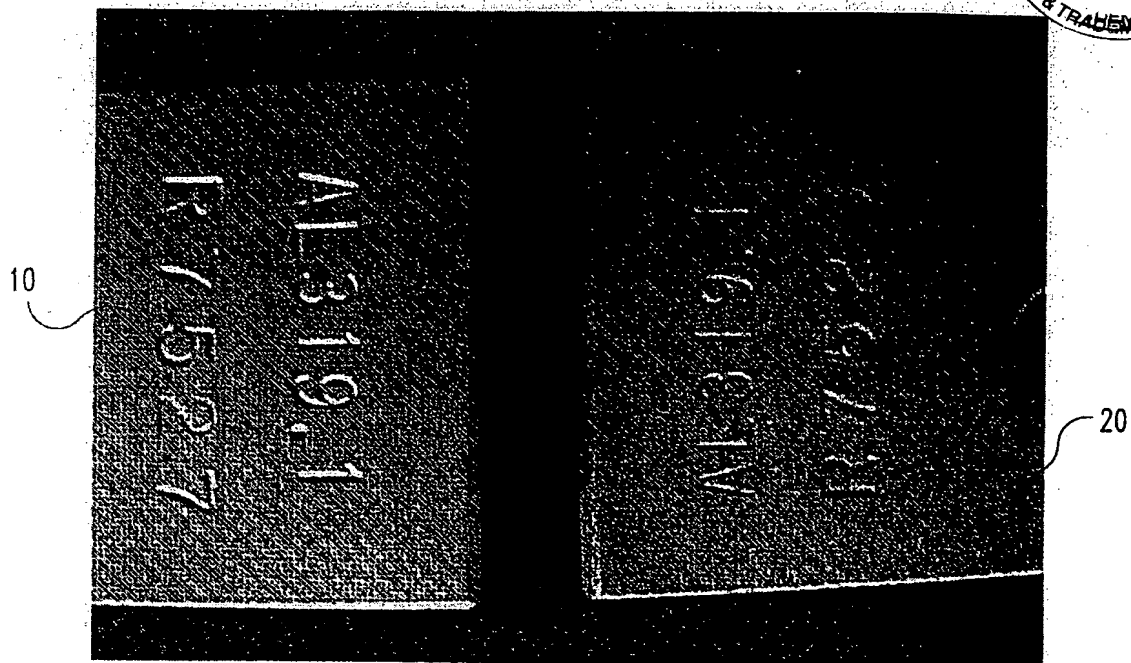
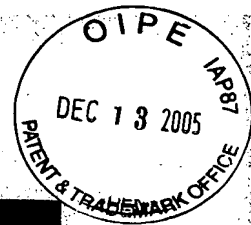


Fig. 1

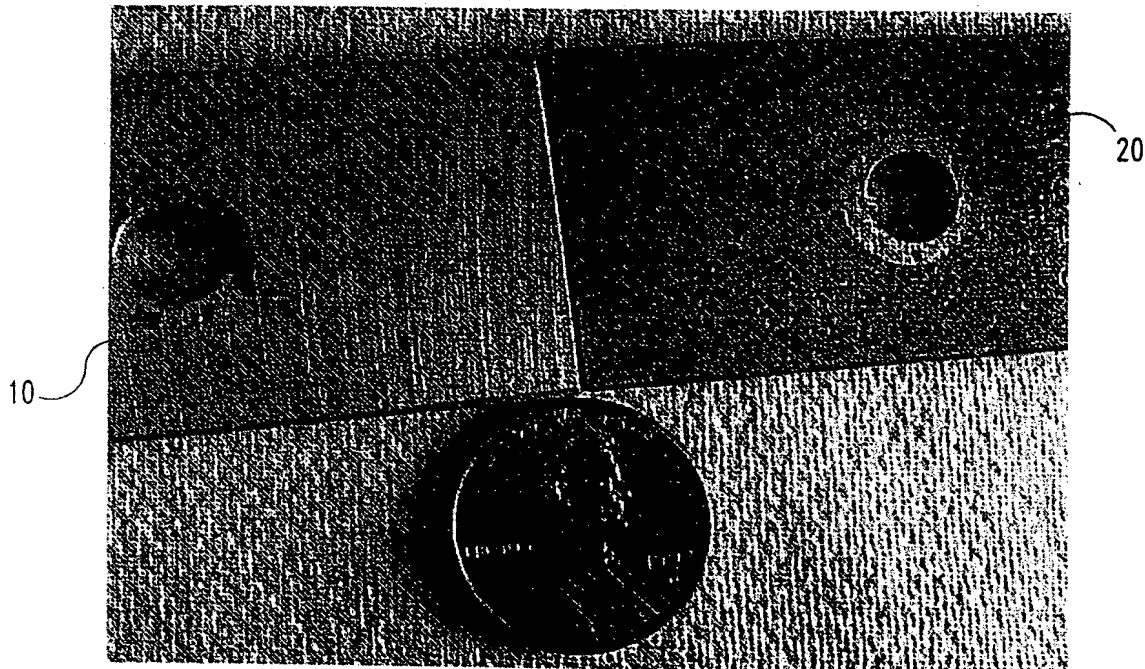
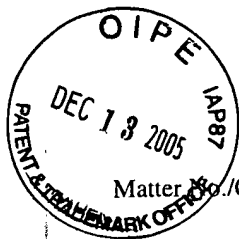


Fig. 2



Matter No./Case No. 8017-244

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